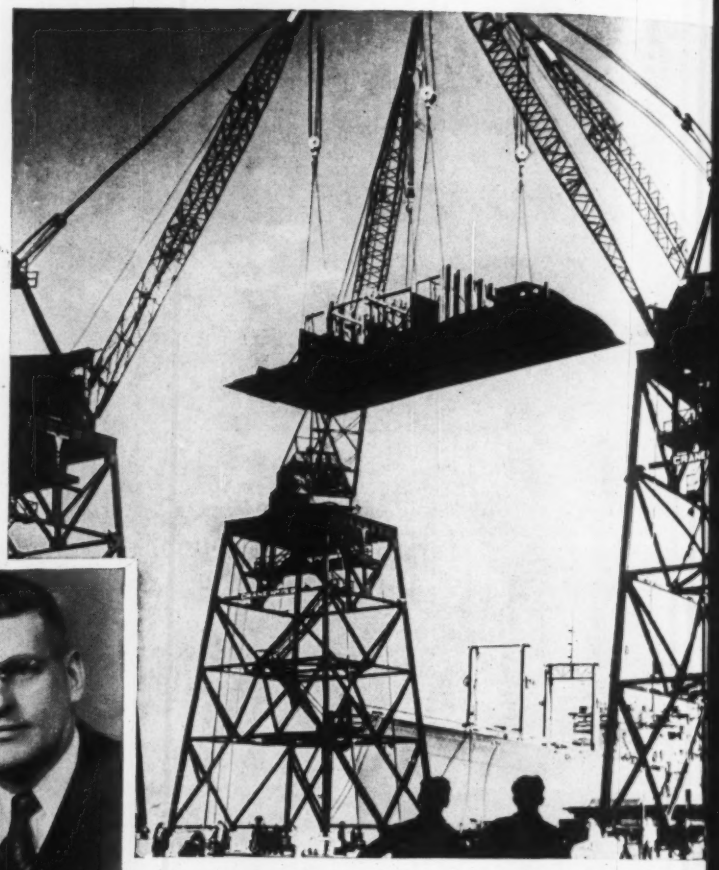
ENGINEERING NEWS-RECORD

The Shipyard Crane That Makes Haste Slowly



by
W. C. Raube,
Industrial Engineering Dept.,
General Electric Company

ON shipyard cranes, accurate control of low speed while lowering equipment, sections of bulkhead, etc. into position, and the ability to *inch the load into place*, are important factors that enable shipbuilders to save time and increase production.

The recent stupendous expansion in shipbuilding the yards for the most part being supplied solely with a-c power—emphasized the need for a braking hoist control which would provide such accuracy in load lowering. Automatic mechanical load brakes, used on cranes in machine shops, warehouses, etc. where the service is not severe, are unsatisfactory for shipyard use because of the excessive wear of friction disks and the resultant high cost of maintenance.

Thus, there was the problem of developing a type of electric crane-hoist control which would provide low-speed lowering, safety, and ease of spotting. A system was designed which uses d-c dynamic braking on a-c motors, the d-c supply being self-contained on the crane.

This system allows a wide range of low lowering speeds, and is far superior to any other type of braking hoist control. The lowest lowering speed (with full load) provided by other a-c control systems is still too fast for satisfactory and accurate operation. Using this system, on a typical controller having four low-speed points, full loads can be lowered at *62, 38, 16, or 6 per cent* of the rated hoist speed. This same control can lower a half load at *30, 19, 7, or 3 per cent* of the hoist speed.

This system operates in a conventional manner when lifting loads. When lowering a load, the stator winding is excited from the d-c source. The motor acts as a generator, and the energy of the overhauling load is absorbed as heat in the motor secondary resistor. The latter can be adjusted by means of the master switch. Thus the braking torque varies within wide limits, and the lowering speed can be controlled with great accuracy.

Equally important is the control provided, which enables the operator to lower an empty hook as accurately as he lowers a load. Either the empty hook or the load can be jogged into position with equal facility.

This is another example of the application of experience and skill by General Electric to solve a problem created by today's conditions. If you have a difficult problem on which we can be of help, we would like to work with you. General Electric Co., Schenectady, New York.

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The Week In Engineering and Construction

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Supreme Court clarifies earlier valuation ruling

Prudent investment method of determining a base for public utilities rates now firmly established. Powers of utility commissions greatly strengthened.

A rate decision of major importance to engineers engaged in utility valuation work was rendered by the U. S. Supreme Court on Jan. 3. In passing upon an order of the Federal Power Commission to the Hope Natural Gas Co. of West Virginia to reduce by $3,609,857 the amount charged natural gas consumers in those parts of Ohio and Pennsylvania served by the company the court said that if the results obtained by such an order were "just and reasonable" the method of evaluating the company's property that produced those results is not the controlling factor.

Justice Douglas, in giving the court's decision said, "It is not the theory but the imact of a rate order which counts. If the total effect of the rate order cannot be said to be unjust and unreasonable, judicial inquiry under the act is at an end." Thus the powers of rate regulatory bodies to make findings that cannot be upset in the courts are greatly strengthened. Under the old "fair value" method of rate making, established in 1898 by the historic Supreme Court decision in the case of *Smyth vs. Ames*, courts could overrule regulatory commissions if a commission had not taken into consideration the several elements of value enumerated in that decision.

New method approved

In fixing the value of the gas company's property at $33,712,526 instead of at $66,000,000 as claimed by the company, the Federal Power Commission used the "prudent investment" method long advocated by the late Justice Brandeis. That method, therefore is now established beyond challenge in the courts so long as the total effect of its application is not unjust or unreasonable. In a decision rendered on March 16, 1942, with respect to the Natural Gas Pipe Line Co. (*ENR* March 26, 1942, p. 488) the court had given tacit approval to the prudent investment method in saying that rate-making bodies are not "bound to the service of any single formula or combination of formulas," but its approval of that method then was not as clear cut as in this case.

Old and new highway construction in Missouri

A good comparison between old and new construction on Route U. S. 66 in Missouri is illustrated by the above photograph taken near Fort Leonard Wood. At the left is an old pavement built several years ago. This road will be used by east-bound traffic. At the right is a new two-lane concrete pavement constructed during the past two years to carry the west-bound traffic.

Work was done by the Missouri State Highway Department, C. W. Brown, chief engineer, J. J. Corbett, construction engineer, and P. H. Daniells, head of plans and surveys.

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A.G.C. to hold meeting in Chicago, Feb. 7-9

The 25th annual meeting of the Associated General Contractors of America will be held Feb. 7-9 at the Drake Hotel, Chicago. The present governing and advisory boards will meet Feb. 7 and 8, and the boards composed of newly elected members will meet Feb. 9. Meetings of the executive committee and the A.G.C. secretaries-council will be held Feb. 6.

Oscar B. Coblentz of the McLean Contracting Co. of Baltimore, Md., is the retiring president. William Muirhead, president of the William Muirhead Construction Co. of Durham, N. C., has been nominated by the boards for president, and Harry A. Dick, president of the Gilpin Construction Co. of Portland, Ore., has been nominated for vice president. Officers will be installed Feb. 8.

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Two new pipelines are approved by WPB

Construction of two new pipelines to carry crude oil from the Elk Basin field in northern Wyoming has been approved by the War Production Board. The first of these to go under construction will be a 70-mile line of 8-in. dia. from Elk Basin on the Wyoming border to Little Buffalo basin. The second project will be a 160-mile line of 10-in. dia. from there to Casper.

The first line, which will be constructed by the Stanolind Pipe Line Co., is scheduled for completion by Sept. 1, 1944, at a cost of $4,200,000.

Illinois engineer act taken to high court

A fight to the finish is promised by the Illinois Engineering Council in its suport of the controversial Illinois Professional Engineering Act, adopted in 1941 by the state legislature. In a recent ruling by Judge Victor Hemphill of the circuit court in Sangamon County, Springfield, Ill. the act was declared unconstitutional. Following this knockout blow, a notice of intent to appeal has been filed in the State Supreme Court by the attorney general for the state, in which the council will join. The case is now being perfected for appeal and will be filed in the March term of court.

Broadens registration coverage

The Illinois Professional Engineering Act was to have become effective Aug. 1, 1943. It was designed to permit registration of some 4,000 professional engineers throughout the state. At the present time only structural engineers and architects are subject to licensing by law.

Although this proposed licensing act was stamped with the approval of virtually every engineering organization in the state prior to its enactment, shortly before it was to have become effective a suit was filed in the circuit court (*ENR*, Oct. 21, p. 582) enjoining and restraining the State of Illinois from expending money for printing, postage and other expenses necessary to put the act into operation.

This restraining suit was instituted by a screen manufacturer in Sangamon County acting as a taxpayer, but the identity of others behind the action has not been disclosed. The Illinois Engineering Council, representing twelve prominent engineering societies in the state, received permission from the circuit court to enter the case as a "friend of the court." Its right to file briefs and be heard in the supreme court is thereby assured.

Has wide application

Final disposition of this case might have an effect on engineer license laws in other states because the finding of the circuit court of the unconstitutionality of the Illinois professional engineering act was predicated primarily on the act's definition of *professional engineering*. This definition, which was taken from the so-called model license law, was characterized by the court as too indefinite to permit of proper administration. The same definition is written into the license laws of several other states.

Another item of concern to Illinois engineers is the possible expiration of a "grandfather" clause in the new licensing law while the injunction is in effect. According to this clause practicing professional engineers in the state may become licensed without examination any time within one year following the effective date specified for putting the act into operation. Normally, the statute of limitations ceases to run under an injunction, but there appears to be no legal precedent for this particular case.

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Walter A. Rogers dies, leader in construction

Walter A. Rogers, 71, founder and chairman of the board of Bates and Rogers Construction Corp., died at Rochester, Minn., Jan. 3. For 43 years he has been one of the leaders in the construction field, and his firm built many notable projects throughout the United States and Canada, including military installations during both world wars.

Mr. Rogers was born in Milwaukee, Jan. 19, 1868, and was graduated as a civil engineer from the University of Wisconsin in 1888. For the next 13 years he was in railway engineering work. In 1901 he resigned as engineer of structures for the Chicago, Milwaukee and St. Paul railroad to form Bates and Rogers Construction Corp. with the late Onward Bates, then bridge engineer of that road. The firm specialized in dam, bridge, tunnel and railroad projects, but also did considerable power plant and industrial building work. At present it is engaged in building many of the permanent bridges on the Alaska Highway, and in fabricating steel barges for the Navy.

In 1938 Mr. Rogers retired as president of the firm and was succeeded by Lester C. Rogers, one of his four surviving sons. However, as Chairman of the board he remained active until his death. Mr. Rogers was prominent in the organization of the Associated General Contractors of America in 1918, and served as its second president. He never lost interest in A.G.C. affairs. He was also active in many engineering, educational and religious organizations.

High post in Far East for Maj. Gen. Sultan

Announcement was made from Allied headquarters in New Delhi, India, last week that Maj. Gen. Daniel I. Sultan, well-known engineer officer, has been appointed deputy commander-in-chief of the United States Army Forces in China, Burma and India under Lt. Gen. Joseph W. Stillwell.

Gen. Sultan, who graduated from West Point in 1907, has had wide experience and many important assignments during his 35 years in the Corps of Engineers. He has served as district engineer in Savannah, Ga.; on fortification work in the Philippine Islands; on lock and dam work on the Ohio River; and was for 3 years a member of the Board of Engineers for Rivers and Harbors. He served on the General Staff in Washington in 1918 and 1919.

In 1929 and 1930 he was in charge of the survey work in Nicaragua, relative to the proposed Nicaragua canal, and in 1931 he was named as a member of the Inter-Oceanic Canal Commission. From 1934 to 1938 he was Engineer Commissioner for the District of Columbia, leaving there to take command of the Hawaiian Division at Scofield Barracks. Since the war he has been commander of the Eighth Corps Area, and of a division at Camp Shelby, Miss.

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Public interest above littoral owner's rights

Holding the littoral owner to be without rights when public interests in such matters are at issue, the California Supreme Court has handed down a decision denying the Miramar Beach Hotel, of Santa Barbara, Calif., damages of $750,000 against the city of Santa Barbara for alleged impairment of its beach frontage.

Damages were sought by the hotel owners on the ground that the construction of a breakwater by the city, to improve the beaches of publicly owned playgrounds, had caused the natural flow of sands to be diverted, thereby injuring the hotel as a beach resort.

The Supreme Court in rendering its decision held that while a littoral owner may have a right, as against an individual, no such rights exist where public interests are involved.

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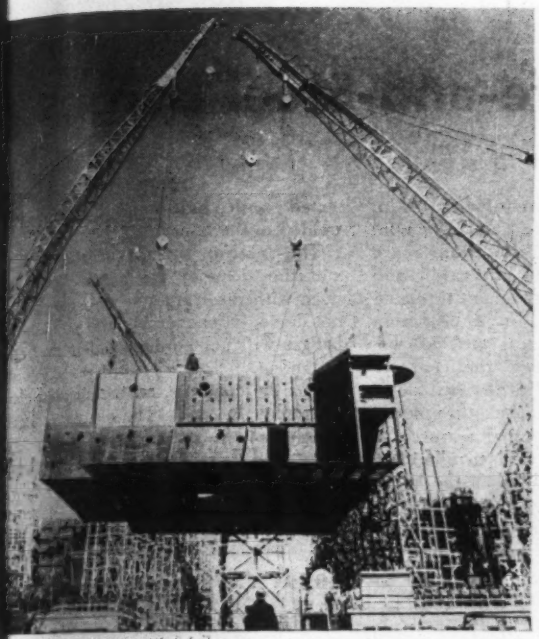

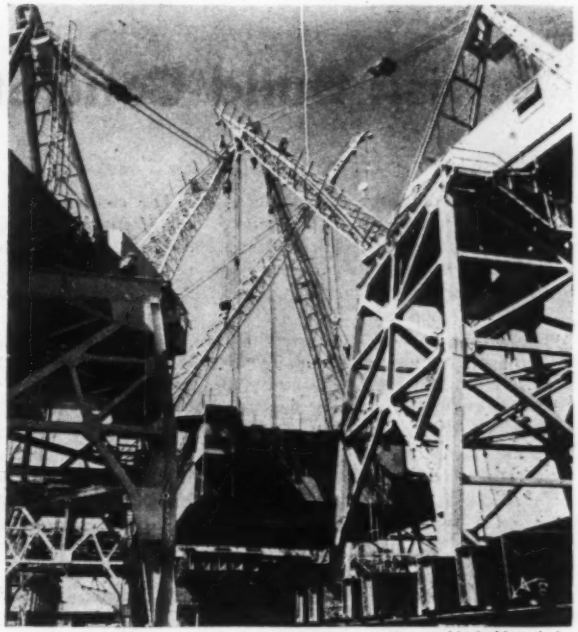

Marinship photos

Heavy deckhouse assembly transferred between cranes

At Marinship Corporation, just north of Golden Gate, San Francisco, the deckhouse assembly for the Liberty freighter Sun Yat-sen was transferred between four shipyard cranes on high gantries without landing it on support.

The 90-ton unit was picked up from the assembly skids by two cranes travelling on rails across the land end of the launching ways. For placing in position it was necessary to transfer the load to cranes operating between the ways and at a right angle to the cranes making the original lift.

Thus it was necessary to travel and swing the two rigs simultaneously with a load requiring very nearly the full lifting capacity of the cranes. Four point pick-ups were used from each crane to distribute the lifting stress in the deckhouse assembly. Transfer and equalization of the load was a delicate job of keeping booms and lines untangled.

After transfer it was necessary to lift the assembly over the forepeak of the vessel, especially high on end-launching ways. This required careful arrangement of slings to assure headroom for lifting without "two-blocking" the rigging.

Youghiogheny flood dam completed in two years

Located 1.2 mi. above Confluence, Somerset County, Pa., the Youghiogheny flood control dam (*ENR*, Dec. 3, 1942, p. 777) has been completed. The project, extending 17 miles into Maryland, took two years to build and cost $6,000,000, of this $4,500,000 was for construction, the rest for land.

The dam is approximately 1,600 ft. long, 184 ft. high, 1,100 ft. wide at the base, and 25 ft. wide at the top. The embankment is 1,600 ft. long and required a fill of 3,500,000 cu.yd. of earth and rock.

The spillway is 2,000 ft. long, 400 ft. at the crest, and is lined with 17,000 sq.ft. of concrete. Under the control over the concrete-lined tunnel is 1,800 ft. long, and 18 ft. in diameter. Water from the tunnel will be regulated by three vertical lift gates, 4 ft., 3 in. by 20 ft. Construction, under the U. S. Engineer Corps, was by Humkin-Conkey Construction Co., and Shofner-Gordon & Hinman Co. of Cleveland. During 1942-43 construction, 500 men on 8-hr. shifts worked on the job night and day.

A 2-lane bridge, for which the piers are already erected, must be built across relocated Route 40 before the valley is flooded. The water will back up 17 miles. Tributaries over a 435 sq.mi. area will drain into the reservoir.

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Inter-city "lend-lease" in North Carolina

The City of Henderson, N. C., borrowed three emergency pumps from the City of Greensboro, N. C., Dec. 23 to meet an acute water shortage. Approval was obtained from the War Production Board for the loan of the pumps, which previously had been allotted to Greensboro for emergency purposes. The pumps were installed as an auxiliary water supply at Rowland's Pond to pump water to the city filter plant a mile away. A pipe line to the reserve reservoir was laid earlier in the fall as the water shortage became serious, but available pumps proved inadequate.

New engineering firm at Birmingham, Ala.

A. C. Polk, Hugh A. Powell and Harry Hendon have formed an engineering partnership in Birmingham, Ala. Col. Polk is former head of the Dixie Construction Co., which built many power and transmission lines in Alabama, Florida, Mississippi and Texas, and was also executive engineer for the $8,000,000 Birmingham industrial water supply system. He is a graduate of the V.M.I. and Rensselaer Polytechnic Institute.

Mr. Powell was vice president of the Dixie Construction Co. and formerly state purchasing agent. Both he and Mr. Hendon were assistants of Col. Polk in building the water supply system, and also were engineering aids in construction of the Anniston Ordnance Depot and Camp Sibert. Mr. Hendon was formerly Jefferson County sanitary engineer.

The firm will engage in general engineering work, water supply, sewage and industrial projects, plant designs and appraisal work.

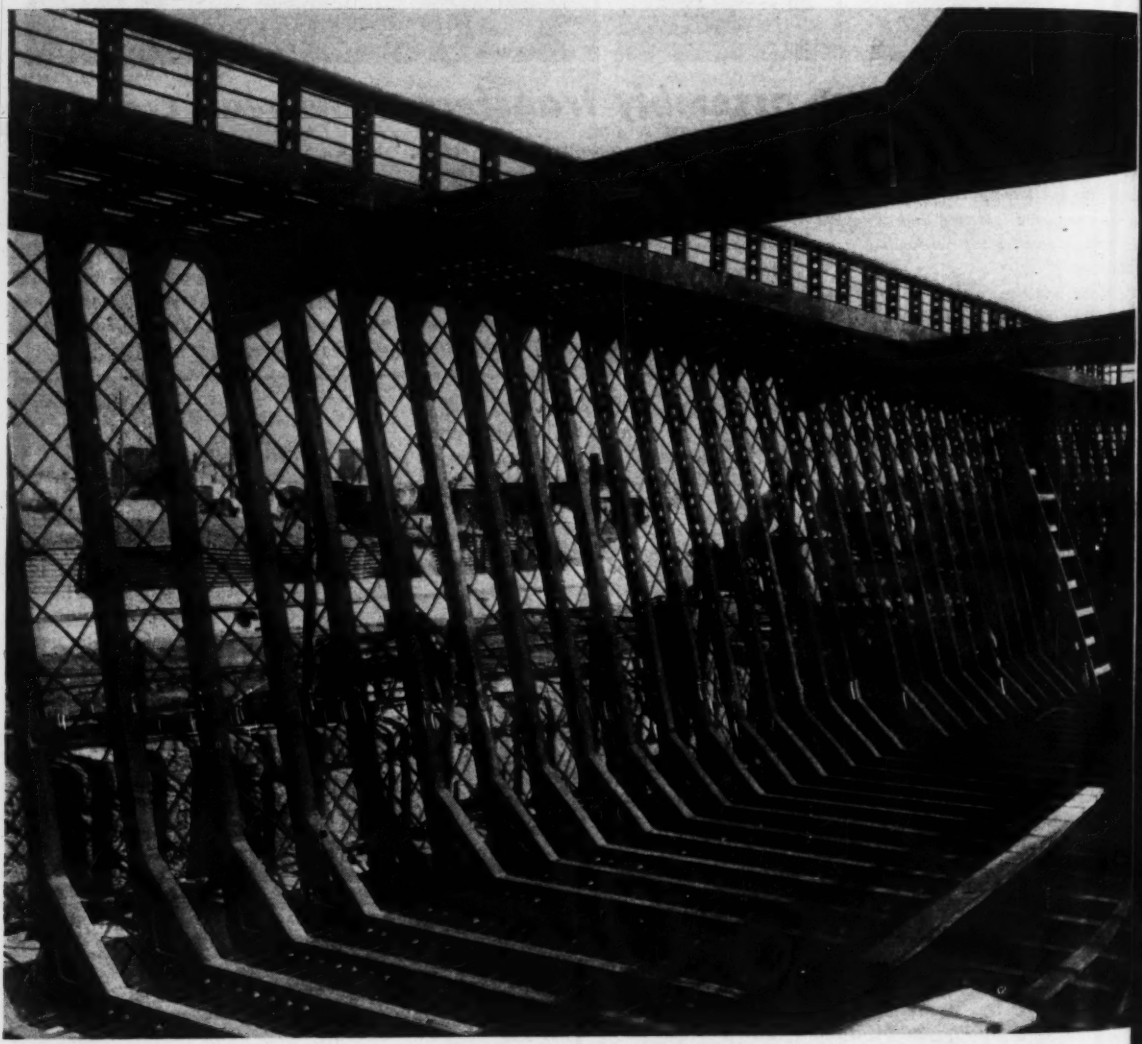
British Build Concrete-and-Steel Barges

A new type of barge consisting of welded steel frames of light weight H-sections tied together with reinforcing bars and encased in concrete has made its appearance on England's River Thames. Designed and built by Sir Owen Williams & Partners, consulting engineers of Stanmore, England, the barges are of two sizes, 200 and 400 tons deadweight, the smaller size having a length of 85 ft., a deck width of 22 ft. and a draft of 8½ ft. British patent rights have been granted for this type of ship construction, and American and other rights are pending.

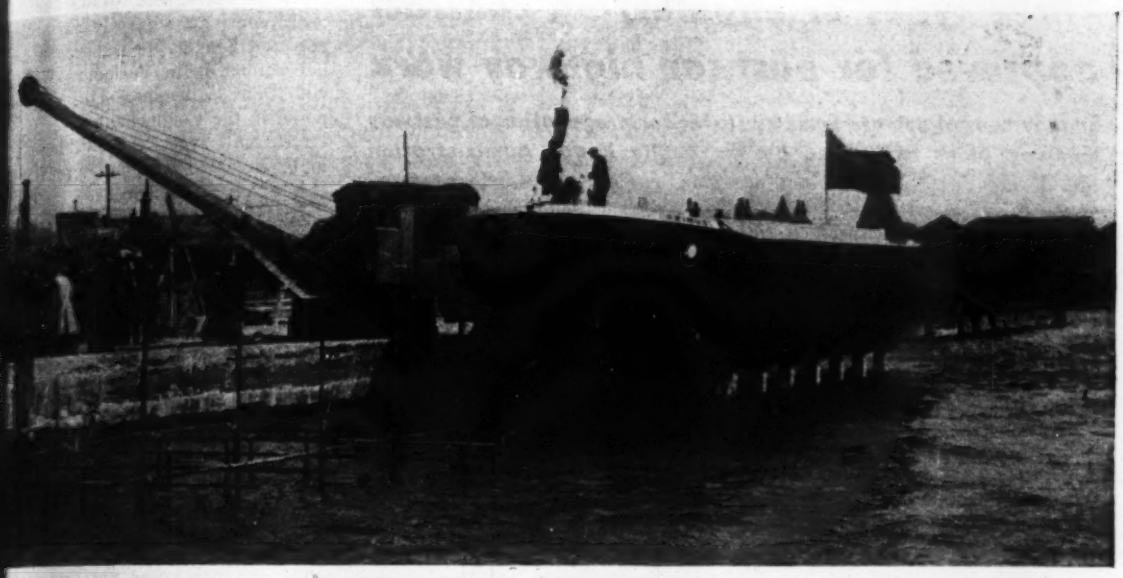
The steel frames are of 6-in. 12-lb. sections, and are spaced on 1 ft. 3 in. centers. The webs of the frames are perforated at close intervals, and through these perforations are threaded steel reinforcing rods in a crisscross pattern. Concrete panels are cast between the steel frames, the concrete surfaces being flush with the surface of the steel section flanges, this detail being one of the principal features of the design, which is said to eliminate "grooving" of the shell when the barge rubs alongside a wharf. All vulnerable edges of concrete are similarly protected with half-rounds and plates welded to the frame.

The interior surface of the bottom and the sides of the barges are also flush with the frames so that cargo will not damage the concrete and so that the barges will not be damaged if they are grounded.

For the concrete, an incinerated clay aggregate is used. The resulting light-weight concrete has been proved by tests and service use to have high strength and complete impermeability. Also, no difficulties have been reported with respect to the bond between the



Framework of barge ready for concreteing. The concrete is placed in panels between the frames whose flange surfaces remain exposed both inside and outside the hull.

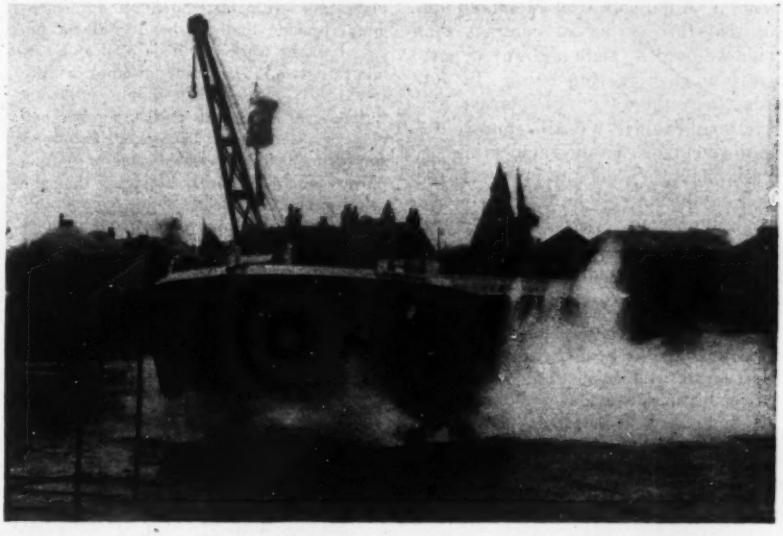


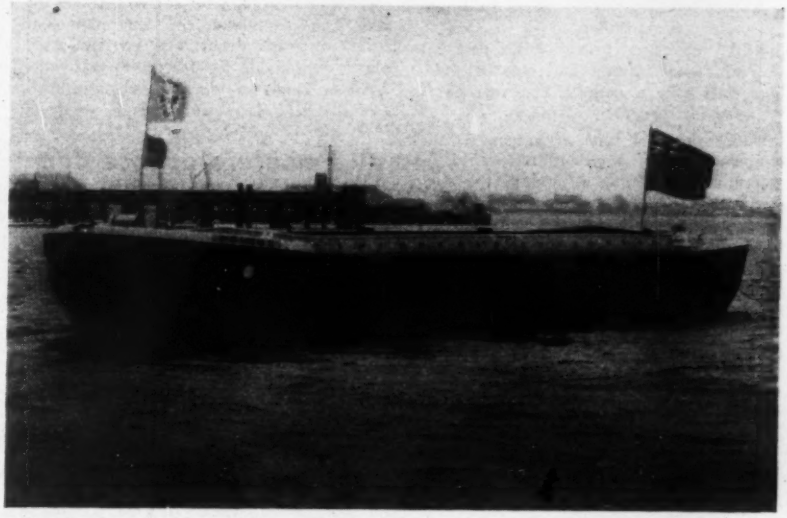
ady for launching, which is accomplished by pushing the supporting posts over with jacks operating against wharf

ncrete and the structural steel. It is d that the steel required in barges ilt to this design is about one-third that required for an all-steel barge. d that the total weight of steel and ncrete is only slightly greater than t of a steel hull.

The barges were launched in a novel nner. They were built on two rows concrete posts extending above the ter, which were pushed over to drop barge onto the surface. Such launch- procedure seldom takes over five nutes.

n constructing the barges the steel ming was first assembled on land and n lifted in sections to the top of the ncrete posts where the longitudinal mbers were welded on. Reinforcing el was installed, the concrete forms ched between the frames and the ncrete encasement placed. Jacks were n inserted between the side of the ge and the wharf, and were operated n the tide was about 3 ft. below the om of the barge. The diameter of concrete posts was about 12 in., and movement of the jacks had to be ., that is, half the diameter of the ts, to push them over. The force re- ed by the jacks is about one-six- th of the light weight of the barge, being well within the capacity of jacks, although in practice four d-operated jacks were used to deal any emergency.





ompleted barge hits the water ovel and (below) floats with normal /board. It is 85 ft. long and has a ton displacement and a 215 ton dweight at 8½ ft. draft.

Three types of engineering contract approved for postwar highway work

Employment of private firms by states for preparation of postwar highway plans authorized by the Public Roads Administration

Questions raised at the recent meeting of the American Association of State Highway Officials in Chicago as to the basis on which the Public Roads Administration would approve employment of private engineering firms by the state highway departments brought out the fact that such engagements under certain conditions had been approved by the PRA in a memorandum issued on Oct. 22, 1943. Recognizing that depleted staffs made it impossible to complete plans and contract drawings for postwar highway project at a rate that would insure an adequate reserve of such plans before the end of the war, Thomas H. MacDonald, Commissioner of Public Roads, set forth in General Administrative Memorandum No. 244 three types of contract that could be used by state highway departments to meet varying needs. In outlining these three types of contract, Mr. MacDonald said: "We will approve the employment of private engineering organizations when definite proposals are made by the state highway departments which appear on review to provide adequate services at reasonable cost." The parts of Memorandum No. 244 relating to the contracts are given below.

There are three general types of agreements that can be made by state highway departments with competent outside engineering organizations that would meet with our approval, as follows:

1. An agreement providing for a definite and reasonable fee for engineering services.
2. An agreement providing for specific rates of pay for each class of employee used on the work with a maximum total cost specified.
3. An agreement providing for payment of actual salaries and cost of materials plus a definite and reasonable fee for direction.

Under the first type of agreement the lump-sum fee of the contract would be determined with due regard to the estimated total cost of construction, exclusive of right-of-way cost, and the complexity of the design. On some projects it may be difficult to make a reasonable estimate of engineering and construction costs until the preliminary engineering work is well along. In such cases the contract should provide for an adjustment in the amount of the fee if it develops that circumstances warrant a revision. Also an adjustment would be in order if for any reason the scope of the project should be changed. On projects involving the design of relatively few and simple structures where the major part of the construction cost is for grading and paving, the engineering cost does not ordinarily exceed 2 or 3 percent and only for unusual projects does the preliminary engineering cost exceed 4 percent of the cost of the construction. These facts should be taken into consideration in setting the lump sum fee for engineering services. The agreement should state specifically the work to be done by the engineering firm and provide for final lump sum payment upon delivery of the completed work satisfactory to the state highway department or for progress payments upon the submission of satisfactory evidence of accomplishment.

Under the second type of agreement the state highway department would be billed at the specific agreed rates for each class of employee directly involved in the preliminary surveys and preparation of the plans and estimates. Such an agreement might provide that the head engineer engaged on the work would be paid at a certain rate with his assistants at other definite rates with the same principle following through for draftsmen and any other employees assigned to the work. The rates specified for these various classes of employees would ordinarily be higher than the salaries paid employees doing comparable work for the highway department because of inclusion of increases to cover the firm's overhead. The agreement could also include a provision for reimbursement for actual traveling expenses, within specified limits, to and from the site of the work. Provision could be made for paying for supplies at actual cost unless they were furnished by the state highway department. The maximum total cost for engineering work should not exceed a reasonable percentage of the estimated construction cost, exclusive of right-of-way cost as indicated above.

Under the third type of agreement actual costs would be paid for salaries, travel expenses and supplies in the same manner as a state highway department is reimbursed plus a reasonable fee for direction by the head or heads of the firm and overhead.

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Vermonters oppose dam in West River valley

A new flareup of Vermont opposition to federal planning of dams on Connecticut River tributaries within its boundaries has gathered momentum in recent weeks as a group of citizens of the West River Valley has sought support to fight the proposed Williamsville Dam above Brattleboro. Vermont was the leader among New England states back in 1939 when they opposed the federal plan to build reservoirs to reduce downstream damage to such towns as Springfield, Mass. and Hartford, Conn. Subsequently Stony Mountain and Knightville Dams were built, but neither is in Vermont. Williamsville Dam is the largest of those proposed in the Connecticut River system. Of earthfill type, it would be 172 ft. high, impound 150,000 acre ft., and cost about $6,000,000.

It is reported that the group opposing the dam has the support of Governor William H. Wills, who has obtained $10,000 from the State Emergency Board to help in the fight. The oppositionists claim that the dam would seriously damage the villages of West Dummerston, Williamsville, Brookline, Newfane, Harmonyville, Townshend and West Townshend. Lieut. Col. E. W. Garbisch, district engineer, Providence District, U.S.E.D., points out that both Newfane and Brookline are outside the reservoir, and only the villages of West Dummerston and Harmonyville, and the lower portions of Williamsville and West Townshend will be flooded. Despite the organized opposition, the feeling against the dam is said not to be entirely unanimous.

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H. M. Hale, WPB head for construction machinery

Henry M. Hale has been named Director of the Construction Machinery Division of the War Production Board, succeeding M. B. Garber. Mr. Hale, who has been with the division as deputy director for several months, was formerly eastern division sales manager of the Caterpillar Tractor Co., Peoria, Ill., of which he became treasurer. Before that, he was a partner in the Tayler-Hale Equipment Co., Memphis, Tenn., distributor of construction machinery. Though Mr. Garber has returned to his former connection with the Thew Shovel Co., Lorraine, Ohio, he will continue to be associated with the WPB construction machinery division as consultant on a part-time basis.

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Government agencies to cooperate on labor

The Office of Labor Production of the War Production Board and the War Manpower Commission recently announced an operating agreement whereby they will cooperate in referring to the War Labor Board the cases submitted by either employers or employees—and also joint applications—seeking wage increases. Construction wages, however, are not covered by the new agreement, according to the office of labor production.

Lumber shortage causes drastic cut in New England government building

Regional WPB chief says Northeastern states use twice as much lumber as they produce. Their shipments from the South and the Pacific Coast were "frozen" Jan. 1.

Sears L. Hallett, chief of construction of the New England regional office of the War Production Board, has announced plans for a drastic curtailment of government building projects in New England, effective Jan. 1. This will be necessary in view of an acute lumber shortage.

Mr. Hallett pointed out that the New England section is using twice as much lumber as it produces. On Jan. 1, southern and Pacific Coast lumber shipments on which New England is dependent were frozen.

Because of this situation, New England lumber officials conferred recently with members of Congress and officials of WPB and OPA at which time it was explained that the let down in timber operations not only in New England, but also in New York and Pennsylvania, was due to the fact that ceiling prices are out of line on the types of lumber produced in those sections. Materials, moreover, greatly needed by the industry, are not being released by WPB, it was said.

Senator Brewster of Maine declared hardwood production had been reduced as much as 50 percent by some operators and softwoods 30 percent, largely through the failure of the OPA to adjust price levels to compensate for the increased cost of production.

Ohio submits large road program for approval

Postwar construction on 135 mi. of highways, estimated to cost $27,000,000, has been submitted for approval to the Public Roads Administration by the Ohio Department of Highways. This proposed work represents 15 percent of the road improvements for which present state funds are available for financing the preparation of construction plans on the 50-50 basis of state and federal funds, according to H. G. Sours, director of the highway department. Final and complete preparation of plans will follow receipt of PRA approval of the proposed work.

The projects now before the PRA are in 21 widely scattered counties and many of them are on the strategic highway network. They include plans for relocated highways, bypasses around traffic congested business districts, new bridges, many miles of new pavement, and resurfacing of existing pavement.

Included is a proposed bypass route to expedite truck traffic through the Toledo bottleneck. Plans calls for a complete analysis of traffic flow into Toledo from U. S. Highways 20 and 25, and State Routes 120 and 577. Probable cost of the improvement will be $7,000,000.

Traffic from the east over US 20 destined for Toledo or Michigan cuts into Toledo via Route 120 by way of Elmore. This outlet also is used by east-bound traffic from Michigan or Toledo. Route 7 is in Toledo and utilizes Summit Street to a bridge recently constructed over the Ottawa River. U. S. Highway 25, the Dixie Highway, from the South, is one of the most heavily traveled roads in Ohio. It enters Toledo from Bowling Green, Ohio, and its great volume of traffic is forced into Toledo through an arterial funnel.

Studies are expected to provide a cure for conditions which now make it extremely difficult for truck and other through traffic to bypass Toledo's congested business district.

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Used equipment ceiling raised for lend-lease

At the urgent request of the War Production Board, the Office of Price Administration has increased the ceiling prices which can be paid to contractors, dealers, and others on certain types of used construction equipment for shipment through lend-lease to England. The increase varies from 5 to 15 percent over present ceiling prices, which are those prevailing before 1939.

All such equipment is to be purchased by the U. S. Engineers. While it was originally planned for the engineers to purchase that to be shipped for troop use, that which is intended for use in England's coal mines was to have been purchased by treasury procurement. Since the Army is already set up to make inspections and handle the equipment, and since the procurement division is said not to be, it was decided that all of the specified items should be purchased by members of the U. S. Army.

For crawler tractors and equipment mounted on tractors but not tractor towed, where items are rebuilt and guaranteed, the ceiling is increased from 85 to 90 percent of the new base cost on 1939 or later models. On items not rebuilt and guaranteed, the price is increased from 55 percent to 60 for 1939-40-41 models, and to 65 for models built since then.

For all other types of construction or roadbuilding equipment, rebuilt and guaranteed items will also bring 90 instead of 85 percent of cost for all models of 1939 or later; while those not rebuilt and guaranteed will be increased from 55 to 65 percent for 1939-40-41 models, and 70 percent for later models. It is hoped that some equipment will be acquired which does not require overhauling. That is the reason for the more favorable ceiling price in late models.

"The War Production Board," OPA's letter of affirmation to the Army Service Forces says, "wants to avoid the sharp increase in the demand for repair parts that probably would result if purchases for a project of such proportions were comprised largely of old equipment."

Contractors and dealers willing to dispose of any required pieces are reminded that because of scarcity of gasoline in England, only diesel and steam engine types or large units of machinery to be used in the mines will be purchased. For troop use, gasoline types also will be acceptable. This places a limit on the amount of large units available for the mines, since the steam-engine types have not been manufactured since about 1930.

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Price change on timber announced by OPA

Due to the fact that the need for heavy timbers, plank, and small timbers has diminished, and the need for light construction types of lumber has now increased, the Office of Price Administration has lowered the ceiling prices on the former and increased them on the latter.

The price changes, which became effective Dec. 26, are as follows:

Maximum prices of Douglas fir dimension lumber, surfaced, are increased $1.50 per 1,000 b.-ft.

Maximum prices of Douglas fir boards in grades No. 2 and lower are increased 50c. per 1,000 b.-ft.

Maximum prices of heavy timbers in grades under "select structural" are reduced $1.50 per 1,000 b.-ft.

Maximum prices of plank and small timbers, in grades under "select structural" are reduced $2.00 per 1,000 b.-ft.

MEN AT WORK In South America

Building port works at Chimbote, Peru, which is said to have the finest natural harbor on the west coast of South America, are S. H. KANMACHER, electrical engineer, and G. F. WATERS, project manager for the Frederick Snare Co. of New York.

Directing construction of an airbase "somewhere in South America", is LT. COL. A. McSPADDEN, Corps of Engineers. New Englanders will recall Col. McSpadden's work on the Surrey Mountain Dam in Massachusetts.

At Bello Horizonte, one of Brazil's newest and most modern cities, we see DR. FABIO VIEIRA MARQUES, consulting sanitary engineer to the state of Minas Gerais, who is a Harvard University graduate, along with ALVARO ANDRADE, chief engineer of the city.

Gathered for a luncheon meeting at Caracas, Venezuela, are: DR. J. VICENTINI GUTIERREZ, chief of the water purification section of the National Institute of Sanitary Works; DR. P. KLINDT, chief of the mechanical service section of the institute; DR. GEORGE BUNKER, consulting engineer of the institute; DR. CARLOS PENA USLAR, president of the institute; DR. FRANCISCO J. SUCRE, director of road, port and railroad facilities, Ministry of Public Works; GEORGE T. McCARTHY, manager of the Venezuelan office of Parsons, Brinckerhoff, Hogan & MacDonald, consulting engineers; DR. LUCIO BALDO, consultant to the institute; and H. L. OHNMEIS, chief engineer of the Parsons, Brinckerhoff, Hogan & MacDonald office in Venezuela.

t Lima, Peru: RICARDO M. SANCHEZ, chief of the sanitary division of the deral Ministry of Works, who is a University of Minnesota graduate; ENRIQUE RUJILLO BRAVO, chief engineer of the Lima municipal water system; and E. A. ARREDO, sanitary engineer of the Pan-American Sanitary Bureau, who formerly as associated with the Texas State Department of Health.

CAPT. ARTHUR R. HOLLETT, Sanitary Corps, who has been assigned as project engineer to the Amazon Basin activities of the Coordinator of Inter-American Affairs. Capt. Hollett is on leave from his post as chief engineer of the University of North Carolina.

AJ. B. GAUSE, Sanitary Corps, who is supervising an Amazon River mosquito control drainage project. Major Gause is on military leave from the South Carolina State Board of Health.

Directing dike construction at Belem, Brazil, for the Office of the Coordinator of Inter-American Affairs, BERNAL H. SWAB adapts himself to the mood of his new environment. Mr. Swab was at one time city engineer of Altoona, Pa., and more recently was construction engineer for Olsen and Dietrich, Raleigh, N. C.

Women workers are being employed in building 100-octane gasoline plants

Their wartime activities include shoveling, sweeping, carrying lumber, digging ditches, unloading brick and cement, handling pipe fittings and distributing supplies.

The woman war worker is successfully invading another masculine field of labor, Petroleum Administrator for War Harold L. Ickes stated Dec. 20. Among the construction workers completing the 100-octane gasoline plants in this country are women working as common laborers, shoveling dirt, sweeping up materials, carrying lumber, digging ditches, unloading brick and cement. They also handle pipe fittings and smaller pipe, insulation materials, bolts and nuts and distribute supplies.

Most of the women are married and are working side by side with their husbands or filling the place of men in military service. Preference in employment is given to women whose husbands are in the armed forces, the Administrator said.

The women receive the same pay as men for comparable work in most instances, although some job dilution was necessary and men perform the heavier work. It is expected some of these women eventually will be upgraded to helpers, assistants and semi-skilled workers.

More than 10,000 women are now engaged by the petroleum industry in operation and maintenance as well as office and laboratory jobs, and in production and refining as well as marketing, according to Deputy Administrator Ralph K. Davies. He said that the women who are helping in the actual construction of 100-octane gasoline plants, where they are employed as common laborers, are proving satisfactory workers, according to their personnel managers.

More women to be hired

"In view of the immediate urgency of the 100-octane construction program it is contemplated more women will be hired to help erect the 22 aviation gasoline plants scheduled to be built in 1944," Mr. Davies stated. "Plant officials hope to retain as many as possible of the women laborers in the operation of the completed refineries. Recent surveys disclose that of 181 petroleum establishments, including refining, marketing, general office, production, exploration, well service, laboratory and pipeline transportation, with 65,509 employees, 6,339 of them are women, comprising 9.7 per cent of the total employment. In the non-office jobs 4.1 per cent of the total number employed are women."

Women account for 8.1 per cent of the employees in the refining branch of the industry. In this highly technical division women are working in the process operations as gaugers, stillmen, routine testers, inspectors, tailhousemen, treaters, warehousemen, and pilot plant operators, as well as loaders, stores clerks, analytical and research chemists, and many other non-office and potentially hazardous jobs.

One Gulf Coast refinery employs a woman as a boiler fireman's helper. Thirty-eight women in West Coast refineries fill the important post of controlman. It was found a stillman spends three-fourths of his work day reading gauges and the remainder making decisions based upon those readings. Therefore women are being employed to read the temperature gauges at the stills with the result that the stillman is enabled to employ a greater proportion of his time at his highest skill.

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New building program for Illinois Tech campus

Construction was started recently on an automotive research laboratory designed as the second permanent unit in the $3,100,000 campus development program at the Illinois Institute of Technology. Being built for the Armour Research Foundation, this building will eventually encompass the Ceramics building, which was placed under construction last September. The laboratory structure is to be of concrete, one story high and measuring 125x100 ft.

Construction priorities for this new $75,000 research building were obtained in view of the fact that the Armour Research Foundation is the official neutral testing laboratory for the U. S. Ordnance Ground Forces, and more space was necessary for the work.

The 20-acre campus, of which the new building will be a part, is on Chicago's near south side; between State St. and the Rock Island-New York Central railroad right-of-way and extending from 32nd to 34th streets.

While the entire program contemplates progressive construction over a considerable period of time, the structures scheduled for early complet include: (1) metallurgical engine ing building, (2) mechanical engine ing building, (3) chemical engineer building, (4) electrical engineeri building, (5) humanities building, (library and administration buildi and (7) field house. Plans for all the buildings have been completed a work on them will begin as soon priorities can be obtained.

Completion of the entire project w result in a consolidated campus Illinois Tech, which was formed in 19 by the consolidation of Armour a Lewis institutes. First building in t program to be completed was the Meta and Minerals Research Building, ded cated last January.

Plans for the campus development cluding all buildings, are by Ludw Meis Van der Rohe, internationally mous architect and chairman of Illin Tech's department of architectur Founder of the noted Bauhas in Europ Van der Rhoe was the architect such famous buildings as the Weisse hof Siedlung in Stuttgart, the Germa Pavilion for the World's Fair at Ba celona, and the "Tugendhot" at Br Czechoslovakia.

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Social research school to study prefabricatio

An unnamed donor has given $50,0 to the New School for Social Resear for further development of a new sy tem of demountable housing consider particularly suitable for military an postwar rehabilitation work. Alvin Joh son, director of the school, announce in New York City.

The fund will make possible a stud of housing and its structural detail under the direction of Paul Lest Wiener, architect and designer, wh with J. L. Sert, town planner, recent devised the building method known a "ratio structures." This system, a adaptation of standardization of par to the mass production and prefabric tion idea, is being utilized in a w housing and community center proje started by the Federal Public Housi Authority at Sidney, N. Y.

Mr. Wiener's research co-workers the New School will include sever engineers. Their study will include e periments and tests to develop desig for "basic universal parts" of structur suitable for quantity manufactu These parts would be convertible an demountable. Studies also will be ma in the possibility of utilizing the syst for small private homes as well as mass housing.

Changes in prospect in valuation methods

oth the Federal Power Commission the Department of Justice are con-ing to press for adoption of the udent investment" theory in the ation of public utilities, according Homer Kripke, assistant solicitor he Securities & Exchange Commis-, in a recent talk before the second ual conference of the Technical uation Society at New York. Mr. pke noted that the "regulatory com-sions have made strenuous efforts have the Supreme Court throw over *yth* v. *Ames* and hold that rate regu-ons may be based on prudent in-ment instead of present value." He lared that some lawyers were of the nion that the Supreme Court has ady done so in the *Natural Gas eline* case, which it decided last r. In any event, Mr. Kripke pointed this very issue is now squarely be-the court again in the case of the *eral Power Commission* v. *Hope tural Gas Company*, and called atten-to the possibility of a decision in next month or so.

(This case was decided on Jan. 3. p. 1 of this issue.)

ven if this question is not finally led in the *Hope* case, remarked Mr. pke, it is likely that both the Federal er Commission and the Department Justice will keep trying to accom-h the abandonment of the doctrine *Smyth* v. *Ames* and the adoption of prudent investment theory. He noted their arguments in the *Hope* case been filed at least four times in r cases before the Supreme Court. hould the Supreme Court expressly mit the rate base to be determined cost or prudent investment theory, cluded Mr. Kripke, the appraiser's in the determination of current re-duction cost will disappear from cases, except possibly in states re there is a statutory requirement finding of present value."

iscussing "Depreciation Variables in plication," Clarence Crocheron, vice ident of the American Appraisal pany, stressed the fact that meth-of depreciation accounting varied rding to the purpose for which reciation is applied.

For accounting and income tax pur-es," stated Mr. Crocheron, "the de-iation base, with certain exceptions, sually the original cost. However, cost systems," he noted, "it is fre-ntly desired that depreciation should on the basis of current values to ect economic conditions prevailing he time costs are determined."

Mr. Crocheron also remarked that de-iation may be computed on a vari-able basis to reflect subnormal and accelerated production activities. During the war period, he observed, accelerated depreciation results from extraordinary use or abuse of machinery and equipment facilities.

The Technical Valuation Society was organized in 1939 to promote better recognition of appraisal and valuation services and to provide a means of intercourse between men interested in such work. H. W. Walter is secretary with headquarters at 33 West 39th St., New York.

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California engineers elect Seage president

Clarence E. Seage of San Francisco has been elected president of the Structural Engineers Association of Northern California to succeed J. B. Wells, professor of structural engineering at Stanford University. Mr. Seage started his professional career in New York City, where he was employed by the American Bridge Company and Millikan Bros. He was assistant engineer with Gustave Lindenthal on the design of the Hell Gate Bridge, New York City, and the Sciotoville bridge across the Ohio River.

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Pittsburgh airport job postponement probable

Because enemy attack on Pittsburgh's war industries no longer seems likely, completion of the $10,000,000 Moon Township airport, started by the War Department to help protect the city, may be delayed until after the war.

Although Allegheny County commissioners will continue conferences with War Department officials and engineers, no plans have been made for completing the airport.

At present the airport belongs to the government. When the war is over it will be turned over to the county, and improvements will continue.

The federal government already has spent $4,600,000 grading the airport's 1,100 acres and surfacing three one-mile-long runways. Next steps are to erect an administration building, hangars, workshops, gasoline storage system, install utility lines, reconstruction of a high-speed road to the airport.

Court blocks Illinois slum clearance law

Chicago's plans for extensive slum clearance projects under the Illinois neighborhood redevelopment corporation law received a blow Dec. 27 when Circuit Court Judge Julius H. Miner ruled the act unconstitutional. The act, passed by the 1941 legislature (*ENR* Aug. 14, 1941, p. 236) permits a private corporation to proceed with any housing project approved by a municipal redevelopment commission and the local planning agency under the power of eminent domain after 61 percent of the property involved has been obtained by normal procedure.

In contrast with a similar law enacted in New York state about the same time, the Illinois act does not include a tax subsidy and terminates control of the project by the commission upon completion of development plans by the corporation. Though lauding the slum clearance purpose of the law, Judge Miner objected to the right of eminent domain being given private corporations "since all public control for the perpetuation of the public uses is removed with the completion of the redevelopment area."

The court decision resulted from a taxpayer's suit filed by a member of a real estate firm to block the expenditure of $1,000 appropriated by Chicago to meet expenses of a municipal supervisory commission established under terms of the act. The war interrupted plans by insurance companies to develop several projects in blighted areas in Chicago. City attorneys declare the decision will be appealed.

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Annual A.R.B.A. meeting at Chicago, Feb. 1-3

The annual meeting of the American Road Builders' Association will be held at the Edgewater Beach Hotel, Chicago, Ill., on Feb. 1, 2 and 3. The meeting will be largely devoted to these problems: the shortages of material, repair parts and manpower; postwar highway construction; and the postwar construction equipment problem.

The association office says: "Everything possible must be done by road builders to conserve the present supply of motor vehicles—yet the virtual stoppage of construction and the reduction of maintenance are causing excessive tire wear and are shortening the life of the nation's vehicles. Means must be determined of relieving the manpower shortage and of ending the delay and uncertainty of obtaining repair parts."

Construction Communiques

Engineering News from the Battlefronts

Tarawa—At a press conference Navy Secretary Frank Knox disclosed that the Navy builders are enlarging a captured enemy air strip on Tarawa. American flyers, he said, were using the field only four days after the initial attack and he gave the greater part of the credit to the Seabees who went ashore, even before the bloody fighting ceased, to put the airfield in shape.

"The bulldozer has taken over where American guns left off in the Gilberts as preparations are rushed to put bases seized from the Japanese in readiness for the anticipated drive against the more heavily fortified Marshall Islands.

"The best airfield is on one of the coral islands that form the Tarawa atoll. It was on this field that American landing forces suffered very heavy casualties. The Seabees are expected to have the field in usable shape within a few days."

Bougainville—Navy base builders have been at work in Bougainville, according to the newspapers. They tell the story of Commander Austin Brockenbrough, of Richmond, Va., who took his outfit in with the first wave of the island offensive.

"They worked under bombing and shelling, but they got a vital airfield built in record time . . . just a few hundred feet from the Japanese lines," read the story.

California—In one week, ten men of the 102nd Seabees from Camp Parks, Calif., hacked out a five-mile mountain road to salvage a $3,500 Navy plane which had been forced down on the rough slopes of Mt. Hamilton.

By jeep and by foot, it was 35 miles from the Naval Air Station at Livermore to the sandy creek bottom where a cadet had pancaked to a miraculous landing.

The Seabees set up camp as near the scene as possible, although five and a half miles from the plane.

With axes, shovels and "cats", they scratched out a road which twisted down the mountainside through terrain matted with trees, brush and boulders. Living on their "K" rations, burning by day and freezing by night, the men had the plane back at Livermore only seven days after they started.

Once they had the road ready and reached the ship, they pinned its wings back, tied the tail to a jeep and used the all-duty tractor to pull both the jeep and plane up and over the mountains.

South Pacific—Jap tanks, despite their notoriously weak fire-power have proved of some value in the South Pacific. One Seabee battalion has recovered a few of the Jap iron war-horses and is using them.

Equally valuable towing a carryall or as a palm up-rooting dozer, the tanks are doing daily duty, Lt. Comdr. G. J. Whelan (CEC) USNR, battalion Officer-in-Charge, reports. Put back into service by Seabees, who were among this island's conquerors, the tanks have substantially augmented the battalion's pool of rolling stock.

Seabee ingenuity has also found a use for scrap metal left behind by the fleeing Japs. Nipponese vessels, disabled close to shore by American forces, are being cut up for use in the construction of bridges and piers. Seabee torchmen cut the metal as they need it from the ship which is secured on the beach.

Bermuda—"Ten months of heavy construction work, always racing against time, was no picnic," reported Comdr. H. H. Miciou (CEC) USNR, officer-in-charge of the 31st Battalion, as he and his men arrived at an east coast port from Bermuda.

"When we landed a year ago, we had to set up housekeeping in tents and use the facilities abandoned by civilian contractors. The job ahead of us was tremendous. We built seaplane hangers and ramps, a huge marginal wharf, oil storage tank farms, a fleet warehouse, an anti-aircraft school for the army, and did the hundreds of construction jobs necessary to turn Bermuda into a first-class operating base.

"We had plenty of problems that required much application of 'Can do' such as a seaplane ramp we built of concrete, floated into place and sunk.

"While there the 31st did much repair and salvage work on freighters that had been battered by tropical hurricanes. Restowing cargo on vessels that had been put out of 'balance' by storms was a regular detail with my men.

"Despite our hardships, the men enjoyed Bermuda. The food was fine, clipper plane service speeded our mail and the island's tropical beauty offered much enjoyment to our men when they were on liberty."

United States—This tribute is paid Seabees by Senator Henry Cabot Lodge, Jr., of Massachusetts:

"The work our Seabees do is fantastic. They land with supplies, a few troops to help protect them, and in nine days they can build an airport out of dense jungle growth—and a good one, port, too."

Press Association Photo from Baker Mfg. Co.

Tough going in Bougainville

Army construction without a bulldozer is as unthinkable as Army transportation without the jeep. Engineer Corps operations in widely scattered parts of the world therefore are invariably characterized by the work of these typically American machines. The one shown here is clearing a trail for the advance of Allied troops on Bougainville Island in the South Pacific. The palm trunk in the foreground, says the photographer's caption, was sheared off by Jap shell fire. Bulldozers have had to operate so far forward in many of our offensive operations that recent ones have been equipped with armor plate cabs.

Chicago Plan Commission headed by A. H. Mellinger

A. H. Mellinger, president and director of the Illinois Bell Telephone Co., Chicago, will accept another public service office Jan. 11 when he becomes chairman of the Chicago Plan Commission. He succeeds Geo. T. Horton, chairman of the Board of Directors, Chicago Bridge and Iron Co., who resigned some time ago because of the press of business duties. In tendering his resignation, Mr. Horton pointed out that Chicago's Master Plan has been developed to a point where it now requires a more vigorous leadership than his time permits. In addition to Mr. Mellinger, the Chicago Plan Commission includes 26 board members, 12 being ex-officio while 14 are layman appointees not connected with Chicago's city government.

A native of Ohio, Mr. Mellinger received his engineering degree in 1905 from the Ohio State University. Shortly after graduation he entered telephone work with the New York Telephone Co. as an underground plant engineer. He became district plant engineer three years later, and held various positions of increasing responsibility with the New York company, finally becoming general plant manager in 1927.

Mr. Mellinger left the New York Telephone Co. in 1928 to become general manager, Chicago area, for the Illinois Bell Telephone Co. He was promoted to vice president in charge of operation in 1930 and in 1932, was elected a director of the company. He became president on Feb. 23, 1938.

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Water now being stored back of Shasta Dam

Storage in the reservoir back of Shasta Dam began on Jan. 1. From Jan. 1 to Apr. 1 the river flow at Shasta Dam will be curtailed to an amount less than the usual flow of the river at this point during an average Jan. 1-Apr. 1 period, but the quantity released will fulfill the estimated requirements.

A Bureau of Reclamation letter addressed to water users concludes by saying that the storage program at Shasta Dam "is so important to California's contribution to the war effort that we feel certain it will have your sympathetic and cooperative support."

JOBS OF THE WEEK

PAVING RUNWAYS, TAXIWAYS AND APRONS, Fort Myers, Fla.

U. S. Engineers, Jacksonville, Fla., awarded the contract for paving additional runways, taxiways and aprons at Buckingham Army Air Field, to Brinson, Cone & Manly, Tampa, Fla., at $804,250.

HANGARS, etc., Bedford, Mass.

U. S. Engineers, Boston, Mass., awarded the contract for hangars, grading, utilities, to John Bowen Co., Boston, Mass., at $547,409.

RECONSTRUCTING BRIDGE, Sandusky, Ohio

New York Central System, F. J. Jerome, chief engineer (west of Buffalo), La Salle St. Station, Chicago, Ill., awarded a contract for reconstructing Sandusky Bay Bridge, to Walsh Construction Co., New York, N. Y. The estimated cost is $750,000.

DWELLINGS, Baltimore, Md.

Baltimore Housing Authority, Baltimore, awarded the contract for 200 unit dwellings, for NHA, to Brookfield Construction Corp., New York, N. Y., at $559,600.

HOUSING, West Los Angeles, Calif.

The Sparton Corp., Los Angeles, will build a 1,520-unit housing project, frame and stucco "Westwood Gardens." The estimated cost is over $1,000,000. Adams, Latta & Green, Glendale, Calif., are the architects.

DWELLING UNITS, Torrance, Calif.

Dawson Homes, Inc., care of Wm. J. Gage, the architect, Beverly Hills, Calif., awarded a contract for construction of 180 rental dwelling units, 2-story, frame and stucco, to R. J. Daum, Inglewood, Calif., at approximately $700,000.

DWELLINGS, Long Beach, Calif.

Biltmore Homes, Long Beach, 115 frame and stucco dwellings, to be built by owner. The estimated cost is $500,000. Hugh Gibbs is the architect.

DWELLINGS, Long Beach, Calif.

J. M. Lenney Building Co., Long Beach, Calif., 171 frame and stucco dwellings, Cerritos Park District, to be built by owner. The estimated cost is $750,000. Hugh Gibbs, Long Beach, Calif., is the architect.

BARRACKS, etc., Treasure Island (Station San Francisco), Calif.

Bureau of Yards & Docks, Navy Department, Washington, D. C., awarded the contract for the construction of additional barracks and receiving station, Treasure Island and Yerba Buena Island, to MacDonald & Kahn, Inc., San Francisco, Calif., at $1,736,000.

DWELLING UNITS, Pascagoula, Miss.

Public Housing Authority, NHA, Atlanta, Ga., received the lowest bids for 540 family dwelling units, frame work from R. P. Farnsworth, New Orleans, La., at $1,168,000, and masonry from Algernon Blair, Montgomery, Ala., at $1,289,000. Landry & Matthes, Hattiesburg, Miss., are the architects.

HOUSING, Middletown, Pa.

Public Housing Authority, New York, N. Y., awarded the contract for 420 units housing project, to Haris Construction Corp., Brooklyn, N. Y., at $1,119,187. W. L. Murry, Harrisburg, Pa., is the architect.

HOSPITAL, Lyons, N. J.

Amsterdam Building Co., New York, N. Y., has been awarded the contract for hospital by Veterans Administration, Washington, D. C., at $1,400,500.

OFFICERS' QUARTERS, Patuxent, Md.

Bureau of Yards & Docks, Navy Dept., Washington, D. C., awarded a contract for officers quarters at Naval Air Station, to John A. Johnson & Sons, Brooklyn, N. Y., at $1,398,000.

Note—Additional bidding and contract news on many projects large and small appear in the Construction News section beginning on page 15.

OBITUARY

C. L. Christensen, 65, well known structural engineer of New York City died at his home there Christmas day. Born in Denmark and educated at Copenhagen's Polytechnic Institute, he came to the U. S. in 1906 and became an American citizen in 1916. From 1906 to 1925 Mr. Christensen was in the engineering departments of the New York Central System working on bridges and structures. As assistant bridge engineer of the Michigan Central from 1917-1925 he was in charge of computations and design of the 640 ft. Niagara arch. From then until 1930 he was associated in turn with McClellan & Junkersfeld and Baker & Spencer, Inc., consulting engineers on power plants. Mr. Christensen will be remembered by many readers for his articles in *Engineering News-Record,* most recently on Russian bridge building, a work in which he was engaged as a consultant to the Russian Railroads for 3 years beginning in 1931. After his return to the U. S. he served as design engineer for the New York World's Fair Corp. and then at the Brooklyn Navy Yard. From 1941 to August, 1943, Mr. Christensen was employed as a designer by Merritt Chapman and Scott, his last work being on the raising of the "Normandie." In addition to his concern with structural matters, Mr. Christensen, throughout his life, was much interested in studies and writing pertaining to ancient philosophy and anthropology. He is survived by his wife, two daughters and two sons.

Harry E. Tyrrell, 62, chief engineer of maintenance of way and structures for the Southern Railway Co. at Knoxville, Tenn., died Dec. 5 in Chattanooga.

Robert Rae, 87, Chicago architect for more than 50 years, died Dec. 19 at his home in Wilmette, Ill. He designed and supervised construction of some of the buildings in the World's Columbian Exposition of 1893.

Daniel J. O'Connor, 73, a Chicago construction engineer for more than 50 years, died Dec. 18. Considered an authority on the construction of bridges, sewers and subways, Mr. O'Connor had directed much Chicago construction including the tunnel under La Salle street. He retired in 1938.

Edward L. Hartmann, 82, who retired in 1934 as chief engineer of the Bureau of Sewers of the Bronx, New York City, after forty-two years of service died Jan. 1. He was graduated from Cooper Union in 1888. In 1895 he received a degree in civil engineering and for a time was an instructor in mathematics at the Cooper Union Night School of Engineering. Mr. Hartmann worked for the Erie Railroad and an engineering firm before he became an assistant engineer for the Borough of the Bronx in 1892.

Dion Geraldine, 92, one of the outstanding engineers for the 1893 World's Columbian Exposition in Chicago, died Dec. 18 at Detroit, Mich. He first achieved engineering fame from his successful construction of a large bridge over the Indus River in India.

Harry Talfourd Frost, 57, architect and co-designer of the Chicago Plan, died Dec. 28. He helped draft the 1923 Chicago zoning ordinance and also did considerable planning for Palm Beach, Fla., Pasadena, Cal., and Denver, Colo.

Mr. Frost was a member of the architectural and consulting firm of Bennett, Parsons and Frost of Chicago for many years. During World War I he designed the Las Cassas army camp in Puerto Rico, and several years ago planned and built the model Quezon City, in the Philippines.

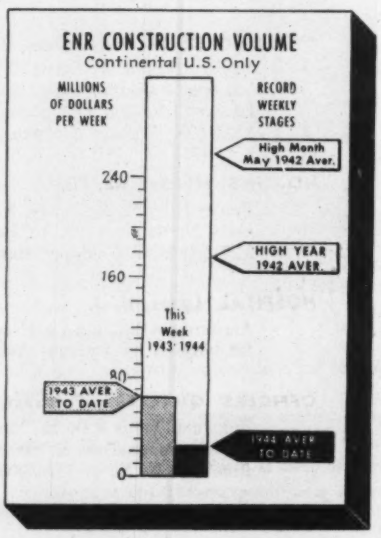
CONTRACTS AND CAPITAL

CIVIL ENGINEERING construction volume for the opening 1944 week totals $21,597,000. This continental U. S. volume, not including the construction by military engineers abroad, American contractors outside the country, and shipbuilding, is 23 percent lower than in the preceding week, and 66 percent below the volume reported for the corresponding week in 1943.

Private construction for the week is 40 percent higher than in the 1943 week, but is 1 percent lower than for a week ago. Public construction is 75 percent lower than a year ago, and is down 31 percent compared with last week. State and municipal construction declines 69 percent from the 1943 week, but is up 70 percent compared with a week ago. Federal volume is 76 and 38 percent lower, respectively, than last year's and last week's reported totals.

In the classified construction groups, gains over the opening 1943 week are in commercial building and large-scale private housing, and earthwork and drainage. Increases over last week are in sewerage, bridges, commercial buildings, and streets and roads.

New capital for construction purposes for the week totals $133,113,000. It is made up of $90,832,000 in federal construction appropriations from the First Deficiency Appropriation Act of 1944, $42,000,000 in corporate security issues, and $281,000 in state and municipal bond sales. The current week's new construction financing volume compares with $524,000 for the opening 1943 week.



CONTRACTS

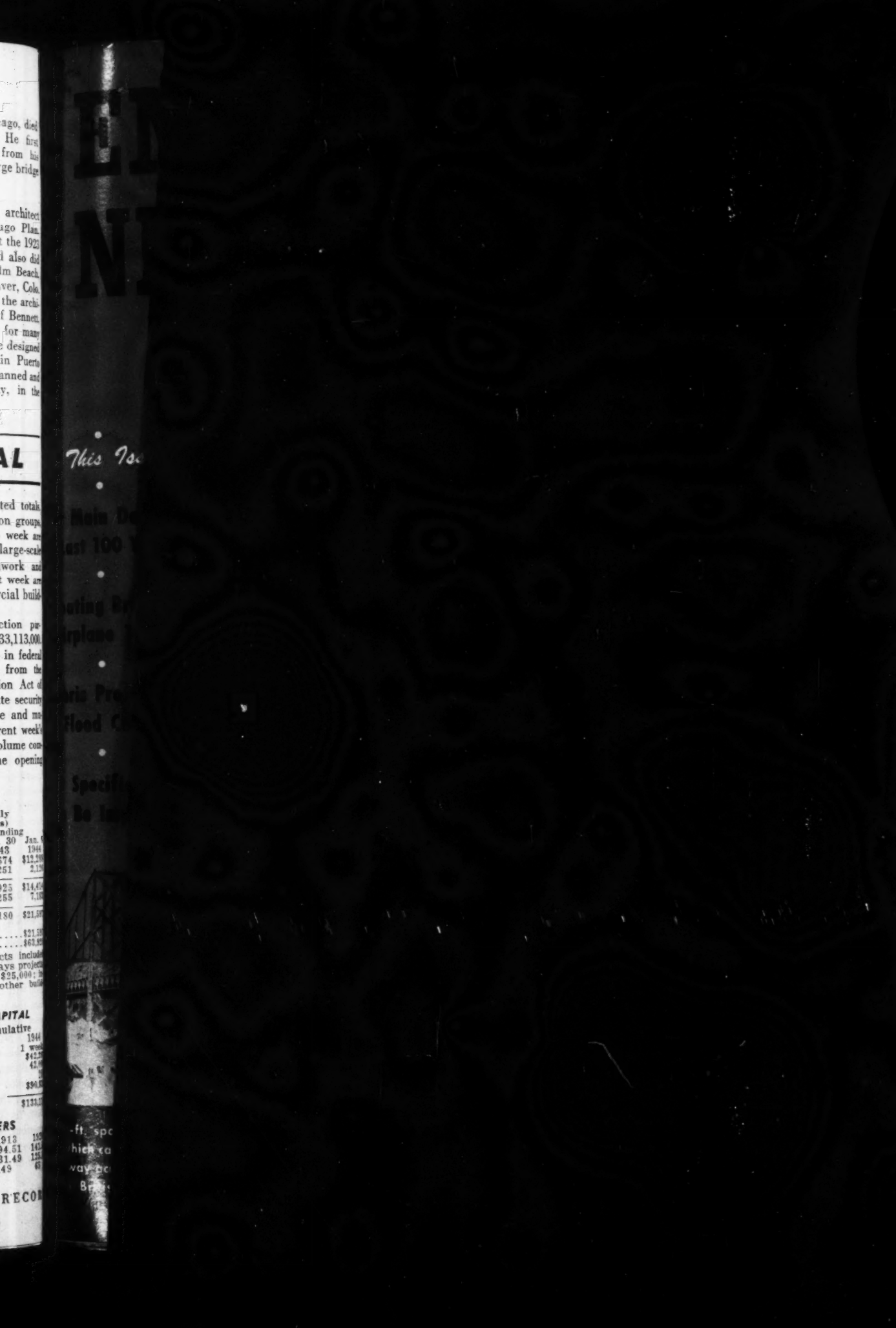
Continental U. S. Only
(Thousand of Dollars)

	Week Ending Jan. 7 1943	Dec. 30 1943	Jan. 1944
Federal	$51,934	$19,674	$12,2
State & Municipal	6,877	1,251	2,1
Total public	$58,811	$20,925	$14,4
Total private	5,117	7,255	7,1
TOTAL	$63,928	$28,180	$21,5
Cumulative 1944.....(1 week).....			$21,5
1943.....(1 week).....			$63,9

Note: Minimum size projects included are: Waterworks and waterways projects, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

NEW PRODUCTIVE CAPITAL

	Cumulative 1943 1 week	1944 1 week
NON-FEDERAL	$524	$42,5
Corp. Securities	....	42,0
State & Mun..	524	5
FEDERAL	....	$90,8
TOTAL CAPITAL	$524	$133,3

ENR INDEX NUMBERS

Index Base=100	1913	19
Construction Cost Dec. '43	294.51	14
Building Cost ..Dec. '43	231.49	12
Volume .....Nov. '43	149	6